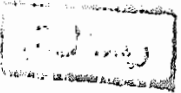


✓ ok
on Disk

*Reduction of the Inferior Vena Caval
Blood Flow as an Option for Treatment
of Esophageal Varices*


*Thesis submitted for partial fulfillment of the MD
Degree in General Surgery*

Presented by
ESSAM EL-DIN HASSAN MOHAMMED
M.B., B.Ph., M.Sc.

617548
L H
Under the supervision of

PROF. DR. MOHAMMED RAGHEB

*Professor of General Surgery
Faculty of Medicine-Ain Shams University*

PROF. DR. MOHAMMED ABU EL-HODA

*Professor of Radiology
Faculty of Medicine-Ain Shams University*

DR. ABDEL WAHAB MOHAMMED EZZAT

*Assistant Professor of General Surgery
Faculty of Medicine-Ain Shams University*

DR. HASSAN GALAL MOURAD

*Assistant Professor of Radiology
Faculty of Medicine-Ain Shams University*

Faculty of Medicine
Ain Shams University
1998/1999



Acknowledgment

*I wish to express my deep gratitude, thankfulness and deepest appreciation to the eminent Prof. Dr. **Mohamed Ragheb**, Professor of General Surgery, Ain Shams University, for his utmost support and encouragement throughout this work, his valuable advise and continuous guiding were of great help.*

*To Professor Dr., **Mohamed Abu El-Hoda**, Professor of Radiology, Ain Shams University. I wish to express many great thanks and deep appreciation to his huge effort and continuous supervision. His valuable experience was behind this thesis.*

*To Dr., **Abdel Wahab Ezzat**, Assistant Professor of General Surgery, Faculty of Medicine, Ain Shams University, for his continuous encouragement and valuable suggestions.*

*I must also acknowledge the great help I have received from Assistant Professor, Dr. **Hassan Galal Mourad**, Radiology Department, Faculty of Medicine, Ain Shams University, for his kind support and valuable experience throughout this thesis.*

*To Prof. Dr., **Said Abdel-Baki**, Professor of General Surgery, Faculty of Medicine, Ain Shams University I would like to express my sincere appreciation and gratitude for his encouragement and valuable guidance throughout this thesis.*

Essam Hassan
1998/1999





List of Contents

	Page No.
▪ <i>Introduction and Aim of the Work</i>	1
▪ <i>Review of Literature</i> - - - -	3
- <i>Anatomy</i> - - - -	3
- <i>Pathophysiology of Portal Hypertension</i> - - - -	23
- <i>Evaluation of Patients with Portal Hypertension</i> - - - -	35
- <i>Management of Esophageal Varices and Portal Hypertension</i> - - - -	50
▪ <i>Patients and Methods</i> - - - -	87
<i>Results</i> - - - -	91
▪ <i>Discussion</i> - - - -	102
▪ <i>Summary and Conclusion</i> - - - -	113
▪ <i>References</i> - - - -	115
▪ <i>Arabic Summary</i>	



List of Figures

	<i>Page No.</i>
<i>Fig. (1): Anatomy of the extrahepatic portal venous system, anterior aspect.</i>	5
<i>Fig. (2): Collateral circulation of porta-systemic shunts</i>	7
<i>Fig. (3): Venous drainage of the stomach.</i>	13
<i>Fig. (4): Venous pattern in the lower esophagus.</i>	13
<i>Fig. (5): Venous arrangement in the wall of the lower esophagus.</i>	15
<i>Fig. (6): Venous drainage of the liver.</i>	19
<i>Fig. (7): Causes and site of block for portal hypertension.</i>	25
<i>Fig. (8): Pathophysiology of portal hypertension.</i>	27
<i>Fig. (9): The four lumen balloon (Minnesota tube).</i>	58
<i>Fig. (10): Endoscopic intravariceal injection sclerotherapy.</i>	60
<i>Fig. (11): Endoscopic paravariceal injection sclerotherapy.</i>	61
<i>Fig. (12): Endoscopic injection sclerotherapy for fundal varices.</i>	61
<i>Fig. (13): Steps of variceal band ligation.</i>	68
<i>Fig. (14): End-to-side porta-caval shunt.</i>	76
<i>Fig. (15): Side-to-side porta-systemic shunt.</i>	76
<i>Fig. (16): Role of TIPSS in the management of suspected variceal hemorrhage.</i>	78
<i>Fig. (17): Transjugular intrahepatic porta-</i>	79

systemic shunt (TIPSS).

Fig. (18): Distal spleno-renal shunt.----- 81

*Fig. (19): Gastro-esophageal devascularization---- 82
for variceal bleeding.*

Fig. (20): The sheet used in this study.----- 88

*Fig. (21): Duplex doppler scan of portal vein----- 96
before tourniquet in patients with portal
hypertension.*

*Fig. (22): Duplex doppler scan of portal vein-- ---- 96
after tourniquet in the same patient.*

*Fig. (23): Duplex doppler scan of the hepatic----- 97
vein in a patient with portal hypertension (before
tourniquet).*

*Fig. (24): Duplex doppler scan of the hepatic----- 97
vein in the same patient (after tourniquet).*

*Fig. (25): Duplex doppler scan of the inferior----- 98
vena cava in a patient with portal hypertension
(before tourniquet).*

*Fig. (26): Duplex doppler scan of the inferior----- 98
vena cava in the same patient (after tourniquet).*

*Fig. (27): Diagrammatic representation of the----- 99
mean portal venous blood flow velocity in 50
consecutive patients with portal hypertension in
cm/sec before and after tourniquet of both lower
limbs.*

*Fig. (28): Diagrammatic representation of the ---- 99
mean portal venous blood flow velocity in 50
consecutive controls with normal portal venous
pressure before and after tourniquet of both
lower limbs in cm/sec.*

*Fig. (29): Diagrammatic representation of the ----- 100
mean hepatic venous blood flow velocity in 50
consecutive patients with portal hypertension*

before and after tourniquet of both lower limbs in cm/sec.

Fig (30): Diagrammatic representation of the mean hepatic blood flow velocity in 50 consecutive controls with normal venous portal blood pressure before and after tourniquet of both lower limbs in cm/sec.

Fig (31): Diagrammatic representation of the mean inferior vena caval blood flow velocity in 50 consecutive patients with portal hypertension in cm/sec before and after tourniquet of both lower limbs.

Fig (32): Diagrammatic representation of the mean inferior vena caval blood flow velocity in 50 consecutive controls with normal portal venous pressure before and after tourniquet of both lower limbs in cm/sec.



List of Tables

Page No.

Table (1): Esophageal venous channels ----- 17
(mean diameter in millimeters)

Table (2): Etiology of portal hypertension... 24

Table (3): Anastomoses between the portal----- 27
and systemic systems.

Table (4): Child's criteria for categorizing----- 33
patients with chronic liver disease, an
indication of prognosis.

Table (5): Modified Child's classification by----- 34
Pugh.

Table (6): Paquet variceal grading system.----- 46

Table (7): Control of acute variceal -- ----- 52
bleeding.

Table (8): Operative procedures to control----- 74
the manifestations of portal hypertension.

Table (9): Descriptive statistics of 50 - ----- 93
consecutive patients with portal
hypertension.

Table (10): Descriptive statistics of 50 - ----- 94
consecutive controls with normal venous
pressure.

Table (11): Descriptive statistics of the -- ---- 107
portal venous blood flow velocity of 50
consecutive patients with portal hypertension
before and after tourniquet.

Table (12): Descriptive statistics of the----- 108
portal venous blood flow velocity of 50
consecutive controls with normal portal
venous pressure.

*Table (13): Descriptive statistics of the ----- 108
hepatic venous blood flow velocity in 50
consecutive patients with portal hypertension
before and after tourniquet.*

*Table (14): Descriptive statistics of the ----- -- 109
hepatic venous blood flow velocity in 50
consecutive controls with normal portal
venous pressure before and after tourniquet.*

*Table (15): Descriptive statistics of the --- - ---109
inferior vena caval blood flow velocity in 50
consecutive patients with portal hypertension
before and after tourniquet.*

*Table (16): Descriptive statistics of the IVC -----110
blood flow velocity in 50 consecutive
controls with normal portal venous pressure
before and after tourniquet.*

List of Photos

	Page No.
<i>Photo (1): Color duplex scan of a great vessel. -----</i>	9
<i>Photo (2): Grade III esophageal varices. -----</i>	39
<i>Photo (3): Portal hypertensive gastropathy. -----</i>	41
<i>Photo (4): Grade I esophageal varices. -----</i>	47
<i>Photo (5): Grade II esophageal varices. -----</i>	47
<i>Photo (6): Grade III esophageal varices. -----</i>	48
<i>Photo (7): Grade IV esophageal varices with impending rupture. -----</i>	48
<i>Photo (8): Gastric fundal varices. -----</i>	49
<i>Photo (9): Acute variceal bleeding. -----</i>	51
<i>Photo (10): Endoscopic intravariceal injection sclerotherapy of esophageal varices. -----</i>	62
<i>Photo (11): Post-sclerotherapy stricture of the esophagus. -----</i>	66
<i>Photo (12): Endoscopic band ligation of esophageal varices. -----</i>	69
<i>Photo (13): Speedband device over the scope. -----</i>	71
<i>Photo (14): The patient lying down with pneumatic tourniquet applied on both lower limbs prior to examination by Duplex doppler scan. -----</i>	89
<i>Photo (15): The patient during the examination by Duplex doppler scan. -----</i>	90
<i>Photo (16): Color doppler scan of the portal vein in a patient with portal hypertension (before tourniquet). -----</i>	95
<i>Photo (17): Color doppler scan of the portal vein -----</i>	95

in the same patient (after tourniquet).

*Introduction and
Aim of the Work*